

What Is Claimed Is:

1 1. A system for delivering a surgical clip to a surgical site within a patient's
2 body to compress body tissue, comprising:
3 an endoscopic device;
4 an endoscope cap disposed on a distal end of said endoscopic device;
5 a surgical clip removably disposed on an outside surface of said endoscope cap;
6 and
7 a deployment device associated with said surgical clip.

1 2. The system of claim 1 further comprising a tissue grasping device
2 disposed through a working channel of said endoscopic device.

1 3. The system of claim 2 wherein said tissue grasping device is a threaded
2 tool.

1 4. The system of claim 2 wherein said tissue grasping device is at least one
2 spring-formed J-shaped barb.

1 5. The system of claim 1 wherein said deployment device is a cable
2 attached at a first end to said surgical clip.

1 6. The system of claim 1 wherein said deployment device is a tubular
2 member disposed around said endoscopic device and adapted to engage with said
3 surgical clip.

1 7. The system of claim 1 wherein said deployment device is a balloon
2 disposed between said endoscope cap and said surgical clip.

1 8. The system of claim 1 wherein said deployment device comprises:
2 a force generator disposed around said endoscopic device and including:
3 an engagement member at least partially disposed within said force

4 generator and movable between a first position where said engagement member does
5 not deploy said surgical clip off of said endoscope cap and a second position where said
6 engagement member deploys said surgical clip off of said endoscope cap; and
7 an actuator operably associated with said engagement member.

1 9. The system of claim 8 wherein said actuator is a compression spring.

1 10. The system of claim 9 further comprising a retention spring disposed
2 around a portion of said engagement member and biasing said engagement member in
3 said first position.

1 11. The system of claim 8 wherein said actuator is a pressurized chamber
2 and wherein said force generator includes a first seal disposed between a piston
3 included on said engagement member and an inside wall of said force generator and a
4 second seal disposed between said piston and an outside wall of said force generator.

1 12. The system of claim 8 wherein said actuator is an electrical coil.

1 13. The system of claim 1 further comprising a balloon disposed between
2 said endoscope cap and said surgical clip wherein when said balloon is partially inflated
3 said balloon has a diameter at a portion of said balloon which is located proximal to
4 said surgical clip which is greater than a diameter of said surgical clip.

1 14. The system of claim 1 further comprising a foam member disposed on
2 said endoscope cap, said foam member having a diameter at a portion of said foam
3 member which is located proximal to said surgical clip which is greater than a diameter
4 of said surgical clip.

1 15. The system of claim 1 further comprising a retractable cover, said cover
2 movable between a first position where said cover covers said surgical clip and a second
3 position where said cover is not disposed over said surgical clip.

1 16. The system of claim 15 wherein said retractable cover is an intubation
2 overtube.

1 17. The system of claim 1 wherein said surgical clip is in a martensite phase
2 when said surgical clip is disposed on said outside surface of said endoscope cap.

1 18. The system of claim 17 further comprising a heating element associated
2 with said surgical clip.

1 19. A method for delivering a surgical clip to a surgical site within a
2 patient's body to compress body tissue, comprising the steps of:

3 disposing a surgical clip on an outside surface of an endoscope cap, said
4 endoscope cap disposed on a distal end of an endoscopic device;

5 deploying said endoscopic device to a site within the patient's body such that
6 said surgical clip is positioned proximate to the body tissue to be compressed;

7 drawing the body tissue within said endoscope cap; and

8 deploying said surgical clip from said outside surface of said endoscope cap.

1 20. The method of claim 19 wherein said step of drawing the body tissue
2 within said endoscope cap comprises the step of applying a suction through a working
3 channel of said endoscopic device to said body tissue.

1 21. The method of claim 19 wherein said step of drawing the body tissue
2 within said endoscope cap comprises the steps of:

3 grasping the body tissue with a grasping device; and
4 pulling the body tissue into said endoscope cap.

1 22. The method of claim 21 wherein said step of grasping the body tissue
2 with a grasping device comprises the step of screwing a distal end of a threaded tool
3 into the body tissue.

1 23. The method of claim 21 wherein said step of grasping the body tissue
2 with a grasping device comprises the step of inserting at least one spring-formed J-
3 shaped barb into the body tissue.

1 24. The method of claim 19 wherein said step of deploying said surgical clip
2 from said outside surface of said endoscope cap comprises the step of pulling a second
3 end of a cable in a proximal direction wherein a first end of said cable is attached to said
4 surgical clip.

1 25. The method of claim 19 wherein said step of deploying said surgical clip
2 from said outside surface of said endoscope cap comprises the step of pushing a tubular
3 member disposed around said endoscopic device to engage said surgical clip and push
4 said surgical clip off of said endoscope cap.

1 26. The method of claim 19 wherein said step of deploying said surgical clip
2 from said outside surface of said endoscope cap comprises the step of inflating a
3 balloon disposed between said endoscope cap and said surgical clip.

1 27. The method of claim 19 wherein said step of deploying said surgical clip
2 from said outside surface of said endoscope cap comprises the step of actuating a
3 deployment device disposed on said endoscope cap wherein when said deployment
4 device is actuated a distal end of an engagement member extends from said deployment
5 device to engage said surgical clip and push said surgical clip off of said endoscope cap.

1 28. The method of claim 27 wherein said step of actuating said deployment
2 device comprises the step of releasing a compression spring.

1 29. The method of claim 27 wherein said step of actuating said deployment
2 device comprises the step of pressurizing a chamber contained within said deployment
3 device.

1 30. The method of claim 27 wherein said step of actuating said deployment
2 device comprises the step of electrically moving said engagement member.

1 31. The method of claim 19 further comprising the step of partially inflating
2 a balloon disposed between said endoscope cap and said surgical clip, said partially
3 inflated balloon having a diameter at a portion of said balloon which is located proximal
4 to said surgical clip which is greater than a diameter of said surgical clip.

1 32. The method of claim 19 further comprising the step of providing a foam
2 member on said endoscope cap, said foam member having a diameter at a portion of
3 said foam member which is located proximal to said surgical clip which is greater than
4 a diameter of said surgical clip.

1 33. The method of claim 19 further comprising the steps of:
2 providing a cover over said surgical clip prior to the step of deploying the
3 endoscopic device to the site within the patient's body; and
4 retracting said cover from covering said surgical clip prior to the step of
5 deploying said surgical clip from said outside surface of said endoscope cap.

1 34. The method of claim 33 wherein said cover is an intubation overtube.

1 35. The method of claim 19 wherein said surgical clip is in a martensite
2 phase when said surgical clip is disposed on said outside surface of said endoscope cap
3 and further including the step of heating said surgical clip to transform said surgical clip
4 to an austenite phase after the step of deploying said surgical clip from said outside
5 surface of said endoscope cap.

1 36. The method of claim 35 wherein said step of heating said surgical clip
2 comprises the step of supplying heated water to said surgical clip through a working
3 channel of said endoscopic device.

1 37. A surgical clip, the surgical clip deliverable at a site within a patient's
2 body by an endoscopic device, comprising:

3 a first elongated tissue grasping surface having a first end and a second end;
4 a second elongated tissue grasping surface having a first end and a second end;
5 a first joint connected at a first end to said first end of said first tissue grasping
6 surface and connected at a second end to said first end of said second tissue grasping
7 surface; and
8 a second joint connected at a first end to said second end of said first tissue
9 grasping surface and connected at a second end to said second end of said second tissue
10 grasping surface;

11 wherein said first grasping surface and said second grasping surface are movable
12 between a tissue receiving position and a tissue grasping position and wherein when
13 said first and second grasping surfaces are in said tissue receiving position said first and
14 second grasping surfaces are adapted to be received on an outer surface of the
15 endoscopic device.

1 38. The surgical clip of claim 37 wherein when said first and second tissue
2 grasping surfaces are in said tissue grasping position said first and second joints bias
3 said first tissue grasping surface toward said second tissue grasping surface and wherein
4 when said first and second tissue grasping surfaces are moved to said tissue receiving
5 position by a force, said first and second joints store an energy potential within them,
6 said energy potential returning said first grasping surface and said second grasping
7 surface to said tissue grasping position upon removal of said force.

1 39. The surgical clip of claim 37 wherein said first and second joints are
2 formed integrally with said first and second tissue grasping surfaces.

1 40. The surgical clip of claim 37 wherein each of said first and second tissue
2 grasping surfaces include a plurality of teeth extending toward an opposed tissue
3 grasping surface.

1 41. The surgical clip of claim 37 wherein each of said first and second joints
2 include a semi-circular portion included between said respective first and second ends
3 of said joints, said semi-circular portion extending toward said first and second
4 elongated tissue grasping surfaces and wherein when said first and second joints are in
5 said tissue receiving position said first end of each of said first and second joints
6 contacts said respective second end of each of said first and second joints.

1 42. The surgical clip of claim 37 wherein each of said first and second tissue
2 grasping surfaces is formed as a semi-circular shaped member.

1 43. The surgical clip of claim 37 wherein each of said first and second tissue
2 grasping surfaces is formed as a straight member.

1 44. The surgical clip of claim 37 wherein each of said first and second joints
2 includes a compression spring disposed between said first end and said second end of
3 said respective joint.

1 45. The surgical clip of claim 37 wherein each of said first and second joints
2 includes a torsion spring disposed between said first end and said second end of said
3 respective joint.

1 46. The surgical clip of claim 37 wherein each of said first and second joints
2 include an elastomeric band disposed between said first end and said second end of said
3 respective joint.

1 47. The surgical clip of claim 37 further comprising a lock on a first side of
2 said surgical clip.

1 48. The surgical clip of claim 47, said lock including a pawl and a notch,
2 said pawl releasably engageable with said notch.

1 49. The surgical clip of claim 47, said lock including a slot defined by said
2 first side of said surgical clip and a ball joint, said ball joint receivable within said slot.

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Abstract of the Disclosure

A system and method for delivering a surgical clip to a surgical site within a patient's body to compress body tissue is disclosed. In one embodiment for the system of the present invention, the system includes an endoscopic device that has an endoscope cap disposed on a distal end of the endoscopic device. A surgical clip is removably disposed on an outside surface of the endoscope cap. A deployment device is associated with the surgical clip for deploying the surgical clip from the endoscope cap to the body tissue that is to be compressed.

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